IT INFRASTRUCTURE STUDY AND ASSESSMENT (INSA)

PHASE I – FINAL REPORT AND RECOMMENDATIONS

MARCH 30, 2011

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A. EXECUTIVE SUMMARY

Introduction

In the Governor's memorandum dated July 21, 2010, the State Chief Information Officer (SCIO) was directed to engage an outside party to conduct a thorough assessment of exiting IT infrastructure, services and costs with the Office of Information Technology Services (ITS) and all Executive Branch agencies. In line with the Administration's efforts to focus government on delivering core services, the assessment was to include an in-depth look at areas across all Executive Branch agencies where consolidation and utilization of private sector IT services would bring more value to the citizens of North Carolina. In November 2010 ITS, under the direction of the SCIO, engaged Technology Partners International, Inc. (TPI) to conduct the assessment.

The scope of Phase 1 of the IT Infrastructure Study and Assessment (INSA) program was to:

- Establish a current Baseline for Participating Agencies (see Table 3 for the list of Participating Agencies) for IT Infrastructure Services
- Conduct an Operational Assessment for the Participating Agencies
- Assess and compare Participating Agencies current cost and services levels to the External Market Place
- Conduct a fact based sourcing assessment and analysis for the Baselined services
- Develop the business case(s) and associated recommendations for in-sourcing or outsourcing IT Infrastructure Services

The assessment employed a Baseline data framework that was uniformly applied across all Participating Agencies, which enabled a consistent and standard comparison to be performed. Participating Agency FY11 actual and forecast financial data was used in constructing the Baselines. Over 140 individuals were interviewed as part of 60 separate business, technical, or a joint business and technical staff interviews that were conducted across each of the Participating Agencies. Assessments were performed for 13 of the largest data centers associated with 10 of the Participating Agencies. Existing service levels were reviewed to assess the extent to which they are consistent with Best Practices and those commonly provided as part of private sector IT services. An IT Service Management (ITSM) self assessment was performed by each of the Participating Agencies based on an extract of process elements from the International Standards Organization (ISO)/ International Electrotechnical Commission (IEC) 20000 standards for IT service management. Lastly, Participating Agency costs for IT infrastructure services were compared to comparable outsourcing market pricing data.

The information obtained from the Participating Agency Baseline data, results of the Operational and Data Center assessment, IT Service Management self assessment results and current cost and service level comparisons were used in developing 26 alternatives for analysis. A decision matrix was utilized for scoring each alternative against three criteria – Cost Management, Risk Management and Service Management. Additionally, five-year financial models were developed for each alternative as input to the sourcing assessment and analysis for the Baseline services.

Assessment Findings

State organizations and employees involved in delivering IT infrastructure services have operated in a less than optimal environment with regard to securing adequate funding necessary to support agency mission requirements. This challenging environment has only been exacerbated by the Great Recession's impact on state government budgets, which has led to further declines in funding for IT

infrastructure services – resulting in lowering of service provisioning levels and increasing the risk profiles for states.

The situation in North Carolina is no different – and the State has been fortunate to not have experienced significant IT infrastructure service outages in light of the findings of the assessment. The absence of significant IT infrastructure services outages is due in great measure to the hard work and dedication of the State's organizations and staff responsible for delivering those services.

Baseline Highlights

Baseline financial data collected for FY10 and FY11 showed relatively flat growth in overall IT costs, with a slight increase (2%) in IT infrastructure costs from FY10 to FY11, as shown in Table 1 following.

Total In-scope IT Spend – by year (in thousands)			
Agency		**FY10**	**FY11**
INSA Totals • IT Infrastructure services are represented in the In-Scope amounts • Direct amounts refer to IT organization costs • Shadow amounts represent non-IT organization costs associated with delivering IT services • Non IT Infrastructure related costs are represented in the Out of Scope amounts (e.g., Applications related costs)	**In-Scope**		
	Direct	$173,337.6	$179,587.8
	Shadow	$45,020.6	$43,8766.0
	Subtotal	**$218,358.1**	**$223,353.9**
	Out of Scope		
	Direct	$113,066.9	$109,917.6
	Shadow	$13,955.6	$14,569.2
	Subtotal	$127,022.5	$124,486.8
	Combined		
	Direct	$286,404.5	$289,505.5
	Shadow	$58,976.2	$58,335.2
Grand Total		**$345,380.7**	**$347,840.7**

Table 1 Total In-Scope Spend

Growth in INSA IT infrastructure costs correlates with growth in the Baseline Full Time Equivalent (FTE) counts (2%) as shown in Table 2 following.

FTEs-detail, by year							
Agency		**FY10**			**FY11**		
	In-scope/Out of scope	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Enterprise Roll-up	Direct-Employees	750.3	1,045.9	1,796.2	774.1	1,062.2	1,836.3
	Direct-Contractors/Temps	68.5	113.8	182.3	63.6	104.5	168.1
	Subtotal	818.8	1,159.7	1,978.5	837.7	1,166.7	2,004.3
	Shadow-Employees	144.2	152.3	296.5	140.0	150.7	290.7
	Shadow-Contractors/Temps	0.2	5.6	5.7	0.2	8.8	9.0
	Subtotal	144.3	157.9	302.2	140.2	159.6	299.7
Grand Total		**963.1**	**1,317.6**	**2,280.8**	**977.8**	**1,326.2**	**2,304.1**

Table 2 FTE Detail

Baseline IT infrastructure service tower costs and associated FTE counts for FY11 are shown in Figure 1 and Figure 2 following.

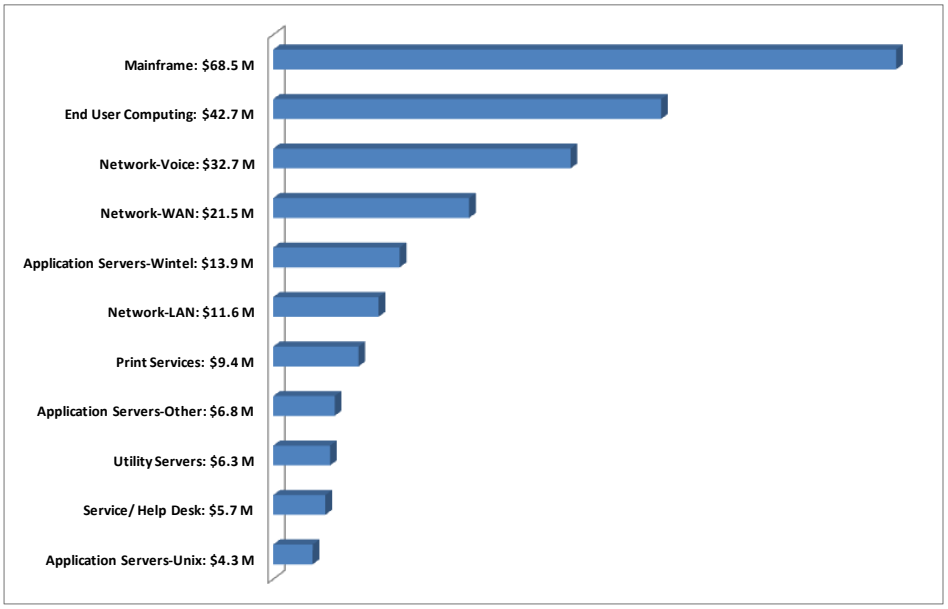

Figure 1 IT Infrastructure Spend by Service Tower

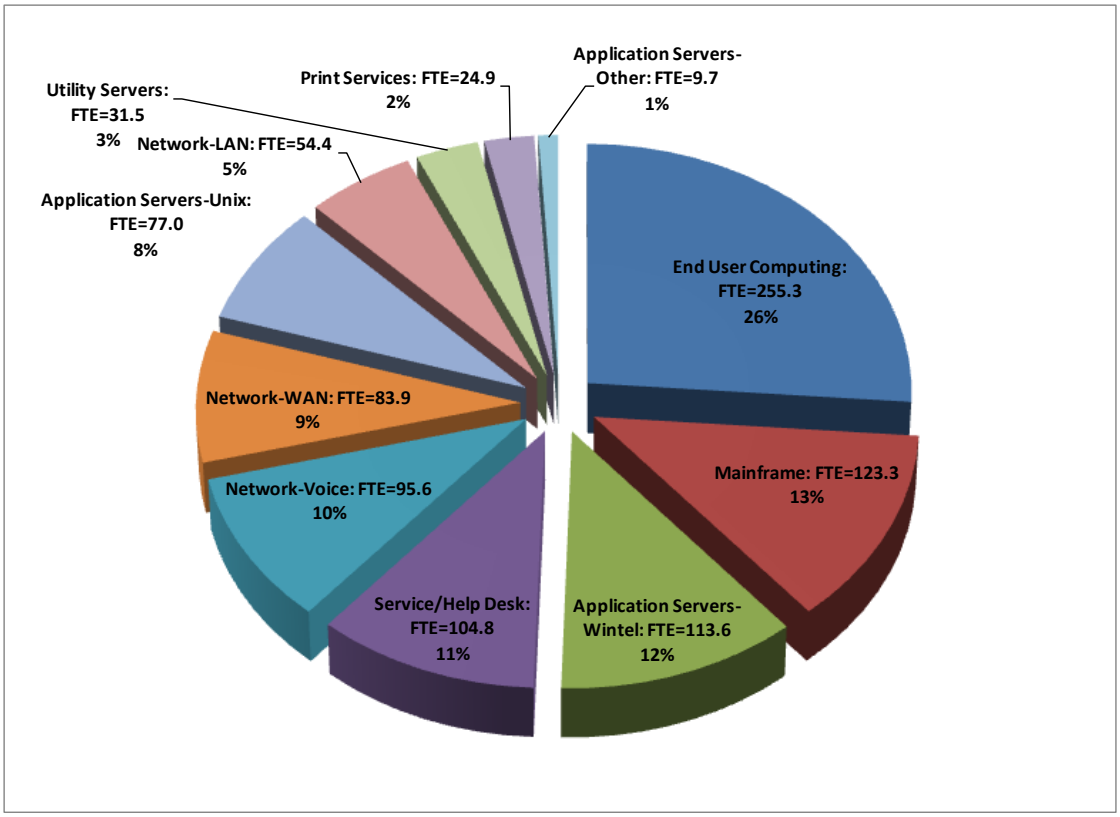

Figure 2 FTE Counts and Costs by Service Tower

Operational Assessment

Today, Participating Agencies operate within a mixed federated/centralized/decentralized model with regard to IT infrastructure services. Some agencies have their IT infrastructure services provided by ITS (consolidated), while others operate mostly independent of ITS (non-consolidated) with selected services provided fully, or partially, by ITS. This mixed model has inherent IT infrastructure service inefficiencies and contributes to a higher risk profile for the Executive Branch as limited IT infrastructure investment dollars must be allocated across a wider base of operations. A listing of INSA consolidated and non-consolidated agencies is depicted in Table 3 following.

Participating Agencies			
Non-Consolidated Agencies		**Consolidated Agencies**	
Information Technology Services - ITS (includes SCIO Office)			
Crime Control and Public Safety	CCPS	Alcoholic Beverage Control Commission	ABC
Department of Environmental and Natural Resources[1]	DENR	Commissioner of Banks	COB
Department of Health and Human Services	DHHS	Department of Administration	DOA
Department of Correction	DOC	Department of Commerce	COM

[1] DENR IT infrastructure services are in the process of being consolidated into ITS.

Department of Revenue	DOR	Department of Cultural Resources	DCR
Department of Transportation	DOT	Department o f Juvenile Justice and Delinquency Prevention	DJJDP
Employment Security Commission	ESC	NC Industrial Commission	NCIC
NC Wildlife Resource Commission	WRC	Office of State Budget and Management	OSBM
		Office of State Personnel	OSP
		Office of the Governor	GOV
		Office of the Lt. Governor	LTGOV

Table 3 Participating Agencies

The Operational Assessment resulted in an aggregate score of 2.94, which is below what is considered as a minimum level of operational maturity for the scope of IT infrastructure services across Participating Agencies, as is depicted in Figure 3 following.

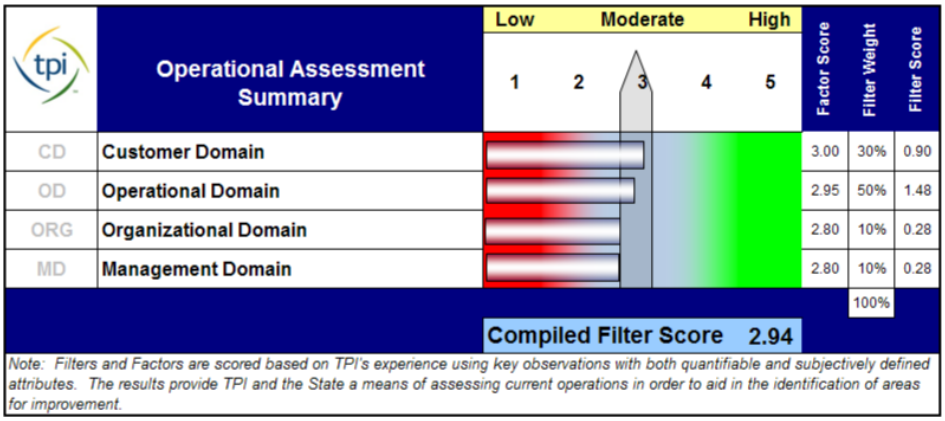

Figure 3 Operational Assessment Summary Score

The primary drivers behind the compiled filter score are in the areas of:

- Service Level implementation
- Formal Customer Satisfaction survey implementation
- Business understanding of the cost of IT services
- Ability to adequately maintain appropriate staffing levels and requisite skill sets
- The agencies (consolidate and non-consolidated) perceive that ITS is not providing value (service/cost) and is not sufficiently aligned with business needs.

Service Level Assessment

Service Level assessments were performed only for non-consolidated agencies and ITS. While service is generally perceived as being good when assessed by the IT and business organizations, the number, type and target performance levels are below market levels as indicated in Figure 4 following; therefore the actual level of service rendered is low.

Summary of Service Levels to Market						
Overall Framework	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
			X			

Agency	Assessment
CCPS	No Service Levels in Place
DENR	No Service Levels in Place
DHHS	At Market
DOC	Below Market
DOR	At Market
DOT	Below Market
ESC	Not Comparable
ITS	Below Market
WRC	No Service Levels in Place

Service Level assessments were performed only for non-consolidated agencies and ITS – consolidated agencies by default inherit ITS Service Levels.

Figure 4 Service Level Assessment Results

Not surprisingly, Baseline costs for IT infrastructure services showed wide variations across the Participating Agencies – due in part to agency size, service consumption, technology platform distributions, available funding and other factors. With regard to comparison of aggregated Participating Agencies IT infrastructure service costs to outsourcing market pricing, it needs to be noted that current operational maturity and service levels are below those provided in the outsourcing market. Analysis of aggregate Participating Agencies costs as compared to outsourcing market pricing is depicted in Table 4 following and indicates only Mainframe services and Wide Area Network (WAN) services offer a high potential savings opportunity.

TPI Judgment of Opportunity to Market							Potential Savings ($ Millions)	
Tower	State of North Carolina - Composite Total Cost	< 5 %	5 < 10 %	10 < 15 %	15 < 20 %	> 20 %	Low $ Range	High $ Range
Mainframe	$ 41.0 M					X	$ 8.2 M	$ 8.2 M
Windows	$ 12.3 M	X					$ 0.0 M	$ 0.0 M
Unix	$ 3.0 M	X					$ 0.0 M	$ 0.0 M
Utility Servers	$ 6.2 M	X					$ 0.0 M	$ 0.0 M
WAN	$ 12.2 M					X	$ 2.4 M	$ 2.4 M
LAN	$ 10.1 M	X					$ 0.0 M	$ 0.0 M
Voice	$ 8.6 M	X					$ 0.0 M	$ 0.0 M
EUC	$ 25.3 M	X					$ 0.0 M	$ 0.0 M
SD	$ 5.7 M	X					$ 0.0 M	$ 0.0 M
Total	$ 124.5 M						$ 10.6 M	$ 10.6 M

Table 4 Judgment of Opportunity to Market

With regard to the outsourcing market pricing comparison results the following items should also be noted:

- Costs and savings estimates are for one-year run-rates
- Mainframe costs are based on ITS direct costs and are not reflective of ITS billings to agencies
- Certain costs are excluded from the analysis, e.g., hardware costs in Application Servers and EUC and carrier costs in Networks
- Potential savings estimates exclude External Service Provider charges for transition and/or other one time or additional expenses – analysis of alternatives do factor in these costs
- Savings opportunity assumes services are sourced in the aggregate (entire service tower)
- Savings excludes costs associated with completion of a sourcing transaction and / or future Sourcing Management functions – analysis of alternatives do factor in these costs
- A variety of factors determine actual outsourcing market pricing and can include such elements as service level requirements, contract size, attractiveness of deal, "fit", proposed contract terms, etc.

Recommendations

The following recommendations are significantly biased towards improving aggregate INSA IT infrastructure services cost effectiveness - in recognition of the financial challenges facing the State of North Carolina. Further, these recommendations strive to minimize the potential of increasing IT infrastructure costs for an individual Participating Agency as a result of pursuing an aggregate cost reduction. A summary of the recommendations and associated benefits are contained in Table 5 following.

Sourcing Recommendations	
Outsourcing Recommendations	**Primary Benefits**
Outsource Mainframe Services • External Service Provider provides Mainframe Services from their facilities / data centers using their equipment and staff ○ Includes all hardware, software and associated support functions • Mainframe Disaster Recovery Services included as part of External Service Provider services	<u>Financial Benefits</u> • Cost savings estimated at $37.2 million over five (5) years • Shifts costs to variable/consumption basis – more efficiently accommodates shifts in demand • Eliminates future capital costs associated with equipment upgrades <u>Other Benefits</u> • Upgrade of Service Levels to market norms • Eliminates challenges of maintaining, retaining and attracting staff with requisite skill sets • Elevates operational maturity and process discipline

Sourcing Recommendations	

Outsource WAN Services
• External Service Provider provides managed network services including:
  ○ Network monitoring and management
  ○ Planning and design services
  ○ Network connectivity and operations services
  ○ Network provisioning management
	Financial Benefits
	• Cost savings estimated at $6.2 million over five (5) years
	• 2.2 year pay-back
	Other Benefits
	• Upgrade of Service Levels to market norms
	• Enhanced network monitoring and improved detection and resolution of network issues
	• Enhanced network security
	• Eliminates challenges of maintaining, retaining and attracting staff with requisite skill sets
	• Embedded technology evolution

Consolidation Recommendations	**Primary Benefits**

Consolidate into ITS Service Desk Services from selected agencies (DOR, ESC, DENR[2] and CCPS)
• Consolidation of Service Desks on to a common service delivery framework
  ○ Utilize existing processes to affect consolidation
  ○ Eliminate agency service desks duplicated by previously consolidated agencies
	Financial Benefits
	• Cost savings estimated at $8.9 million over five (5) years
	• Six (6) month pay-back
	Other Benefits
	• Leverages existing ITS resources
	• Rationalize aggregate staff and optimize skill sets
	• Increases volume of incident and service request data to serve as input to continuous improvement programs

Consolidate into ITS Servers from selected agencies (ESC, CCPS, DHHS, DOT and WRC)
• Transfer Service Management responsibilities to ITS including:
  ○ Server monitoring and operations management
  ○ Planning and design services
  ○ Server provisioning management
	Financial Benefits
	• Cost savings estimated at $23.8 million over five (5) years
	• Less than one year pay-back
	Other Benefits
	• Leverages existing ITS resources
	• Rationalizes aggregate staff and creates opportunities for optimizing requisite skill sets
	• Enables physical consolidation into an ITS data center

Table 5 Summary of Recommendations and Benefits

Implementation Considerations

There are no inherent interdependencies across the recommendations. However, synergies may be achieved in sequencing the implementation of the recommendations. For example, concurrent

[2] DENR IT infrastructure services are in the process of being consolidated into ITS.

execution of the Mainframe and WAN outsourcing procurements will yield lower transacting costs and enable consideration of a single or multiple External Service Provider solution.

An overarching governance framework for IT shared services should be established, either through the reconstitution of the Information Technology Advisory Board, or the creation of a successor body, to provide advice and guidance to the SCIO and ITS with regard to planning, implementing and delivering IT services.

In conjunction with implementing the recommendations, a comprehensive communication and change management program must be developed and implemented to facilitate organization alignment with recommendation goals, and affect the changes needed to attain identified benefits.

Outsourcing Critical Success Factors and Imperatives

A well structured contract is critical, but insufficient to ensure a successful outsourcing relationship. Significant internal transformation will be necessary to enable the outsourcing relationship, along with establishing disciplined sourcing management and governance (Agency and External Service Partner facing), in order to achieve the outsourcing objectives. Additionally the following critical success factors and imperatives must be addressed:

- Support for outsourcing must be evident in both the Governor's Office and the General Assembly.
- A comprehensive communication and change management program must be developed and implemented from the start of the procurement activity.
- Staff responsible for delivering the services to be outsourced must remain accessible through the services transition period, to affect knowledge transfer of the operations from the State to an External Service Provider. This may require precluding staff transfers prior to the completion of transition.
- A dedicated procurement core team must be established that is comprised of relevant subject matter experts and augmented, as appropriate, with key stakeholders.
- A formal Vendor / Sourcing Management Organization (SMO) must be established well in advanced of contract award.

Consolidation Critical Success Factors and Imperatives

Critical to the success of internal consolidation is the establishment of a governing body empowered to ensure the principles of consolidation are followed. The timelines contained in the business cases should be adhered to in order to attain the identified benefits. Additionally the following critical success factors and imperatives must be addressed:

- All identified Participating Agencies' within the scope of the recommended alternative IT infrastructure services must be consolidated to achieve the benefits of the recommendation.
- Larger Agencies must be consolidated first.
- Non-consolidated Participating Agency staff currently delivering the services to be consolidated must remain accessible through the services transition period.

- A comprehensive communication and change management program must be developed and implemented prior to starting consolidation.
- Existing consolidated Participating Agencies customer satisfaction levels must be improved.